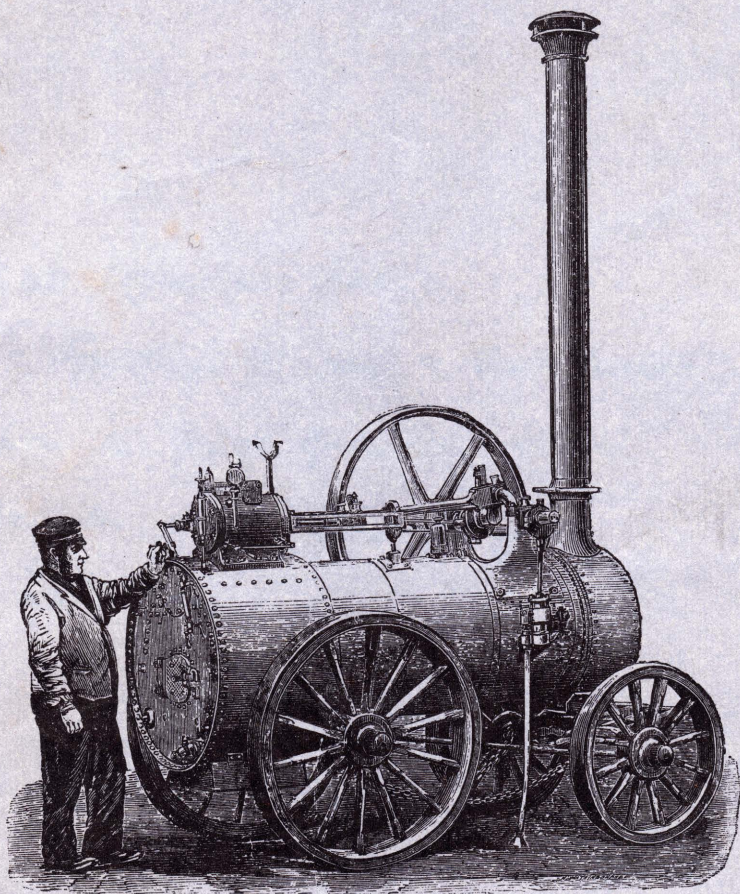


1869.

CATALOGUE OF MACHINERY.

No. 3.



DANIEL ADAMSON & CO.,

NEWTON MOOR IRON WORKS,

HYDE, NEAR MANCHESTER.

No. 3.

1869.

DANIEL ADAMSON & CO.,

Newton Moor Iron Works,

H Y D E ,

NEAR

MANCHESTER.

Passenger, Goods, and Telegraph Station:—

NEWTON MOOR,

M. S. & L. MAIN LINE.

MANCHESTER:

PALMER & HOWE, PRINTERS, 1 AND 3, BOND STREET.

1869.

DANIEL ADAMSON & CO.,

Manufacturers of

Locomotive Steam Engines.

Stationary Expansive, Condensing, High-pressure, and
Compound Engines.

Stationary Blowing Engines.

Ditto Pumping Engines.

Portable Steam Engines.

Locomotive, Stationary, and Marine Boilers, to work
from 10 to 200 lbs. per square inch.

Steam Cranes, Steam Hoists.

Iron Bridges.

Iron Roofs, Beams, and Pillars.

Complete Gas Works.

Hydraulic Lifts, for Warehouses.

Adamson's Patent Hydraulic Lifting Jacks.

A LARGE ASSORTMENT OF SPUR, BEVEL, AND MITRE
WHEEL PATTERNS IN STOCK.

ALSO PEDESTALS AND HANGERS OF ALL SIZES.

*By means of Patent Wheel-Moulding Machinery, D.A. & Co.
are prepared to supply Spur, Bevel, or Mitre Wheels of
any size and pitch from 16 inches to 13 feet diameter,
and up to 17 inches wide.*

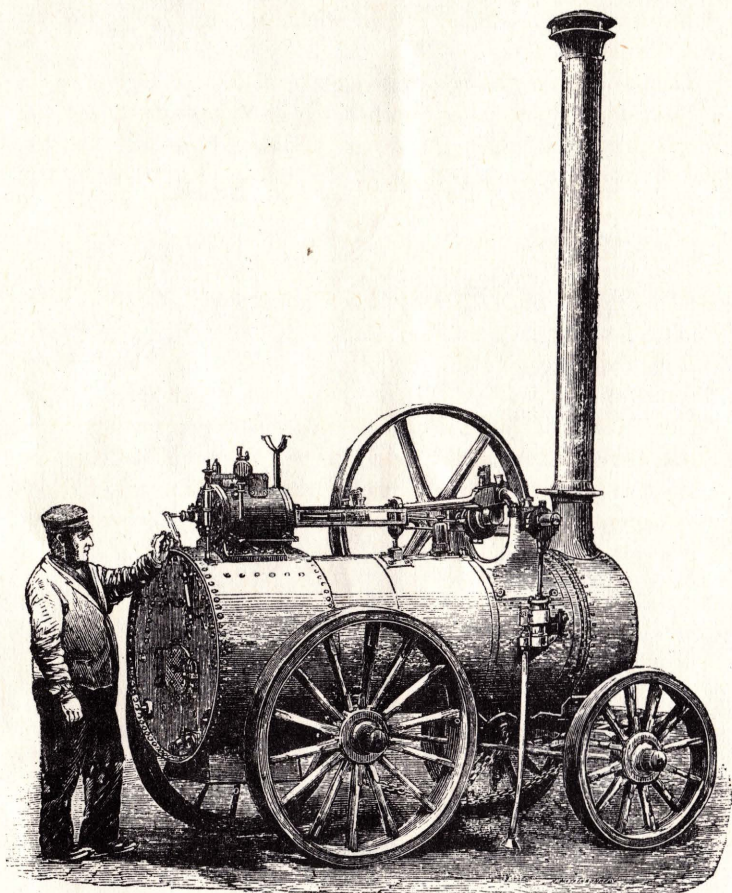
GENERAL HYDRAULIC ENGINEERS.

Makers of Compound Engines to work steam three times over.

Prices and Particulars on application at

NEWTON MOOR IRON WORKS, HYDE, near MANCHESTER.

DANIEL ADAMSON & CO.'S
IMPROVED PATENT
PORTABLE STEAM ENGINE.



The special advantages contained in these Engines are their extreme simplicity of construction in the whole of the working parts, combined with proportionate strength, reducing the wear and tear, and consequent repairs, to the smallest possible amount.

The Boilers are fitted with D. Adamson & Co.'s New Patent Circular Fire Box, of Low Moor iron, in one solid piece, and without seams, thus giving uniform expansion and contraction. These Fire Boxes present only a small proportion of flat surface,

consequently very few stays are required, the strain on the plates being equal throughout. Increased facility for repairs is also an important feature in these Boilers.

These Engines are also fitted with D. Adamson & Co.'s Patent Circular Variable Expansion Valve, which may be set to cut off at any part of the stroke, and in which the friction is reduced to a minimum.

The Cylinder may be made with a Steam Jacket, which also acts as a steam dome, to which is attached the steam pressure gauge and whistle, and from which the steam is conveyed through the stop and throttle valves to the slide valve; all these are fixed entirely independent of the Boiler, preventing the cutting of unnecessary holes in the plates, and easily accessible for examination or repairs.

They are also fitted with Improved Metallic Spring Piston, Double Square Slide Bars, Inside Crank Shaft, Vertical Force Pump, Reversing Apparatus, Improved Governors, Turned Fly Wheel, Two Safety Valves, one being under lock and key; Steam Pressure Gauge, Whistle, Tallow Cup, Glass Water Gauge, Gauge Cocks, Man and Mudhole Doors, Complete Set of Wrenches, Firing Irons, Tube Brush, Funnel, Oil Can, Waterproof Cover, &c. The whole being mounted on strong wood travelling wheels, with case-hardened wrought-iron axles, check chains, and slipper. (Iron wheels can be supplied at the option of the purchaser.)

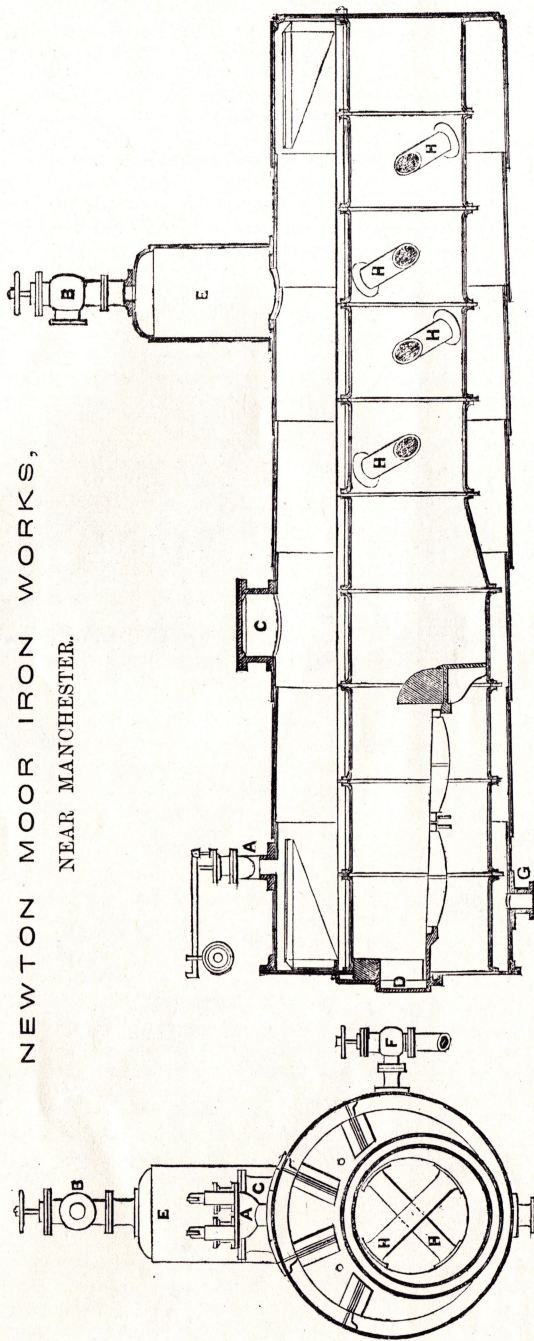
PRICES.

4-Horse Power, with One Cylinder, 6 $\frac{3}{4}$ in. diam.....	£150	0	0
6 Ditto ditto 8 $\frac{1}{4}$ in. ,, ...	180	0	0
8 Ditto ditto 9 $\frac{1}{2}$ in. ,, ...	210	0	0
10 Ditto ditto 10 $\frac{3}{4}$ in. ,, ...	240	0	0
12 Ditto ditto 12 in. ,, ...	270	0	0
10-Horse Power, with Two Cylinders, 7 $\frac{1}{2}$ in. ,, ...	260	0	0
12 Ditto ditto 8 $\frac{1}{4}$ in. ,, ...	300	0	0
14 Ditto ditto 9 in. ,, ...	335	0	0
16 Ditto ditto 9 $\frac{1}{2}$ in. ,, ...	375	0	0
18 Ditto ditto 10 $\frac{1}{4}$ in. ,, ...	410	0	0
20 Ditto ditto 10 $\frac{3}{4}$ in. ,, ...	445	0	0
25 Ditto ditto 12 in. ,, ...	545	0	0
30 Ditto ditto 13 in. ,, ...	645	0	0

If Engines with Jacketed Cylinders	extra.
If Boilers with Drilled Rivet Holes and Weld-up into Rings for Barrel and Fire-Box Casing	„
If with Steel Boiler	„

D. ADAMSON & CO.'S PATENT SEAM AND CIRCULATING TUBE CORNISH BOILER.

NEWTON MOOR IRON WORKS,
NEAR MANCHESTER.

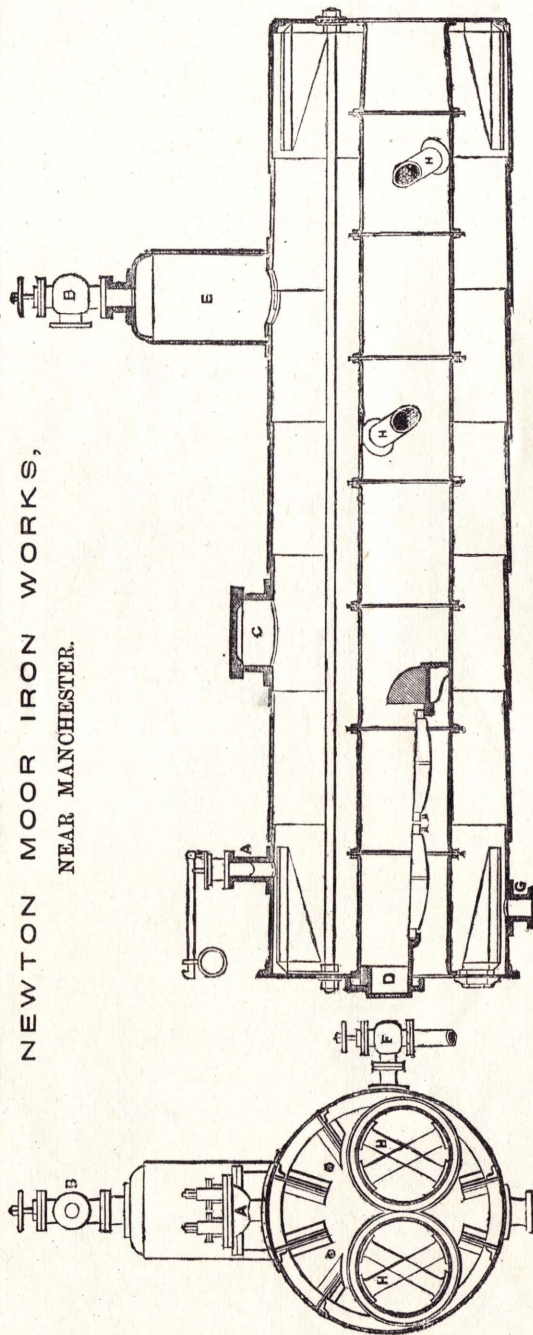


Reference

- A DOUBLE SAFETY VALVE.
- B STEAM MANHOLE.
- C FIRE FRONT.
- D DOME.
- E FEED VALVE (FOR CHECK ACTION).
- F BLOW-OFF MUD BASE.
- G CIRCULATING TUBES. ARE PLACED VERTICAL & SOLID WELD.
- H ENLARGED SECTION OF PATENT SEAM.
- I

D. ADAMSON & CO.'S PATENT SEAM & CIRCULATING TUBE DOUBLE-FLUED BOILER.

NEWTON MOOR IRON WORKS,
NEAR MANCHESTER.

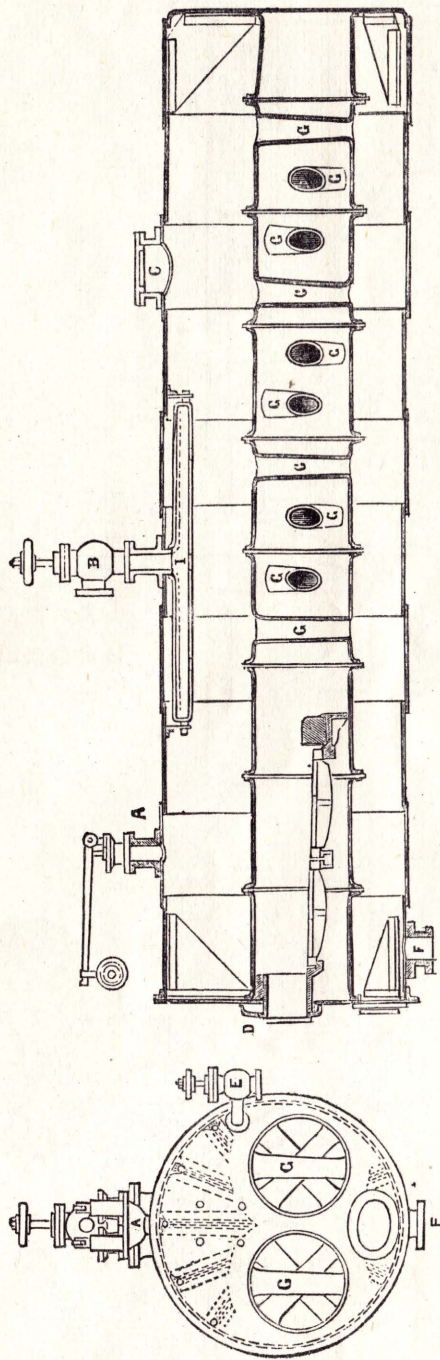


Reference.

- A DOUBLE SAFETY VALVE.
- B STEAM NOZZLE.
- C MANHOLE.
- D FIRE FRONT.
- E DOME.
- F FEED VALVE (CHECK ACTION).
- G BLOW-OFF MUD BASE.
- H CIRCULATING TUBES. ARE PLACED VERTICAL AND SOLID WELD.
- I ENLARGED SECTION OF PATENT SEAM.

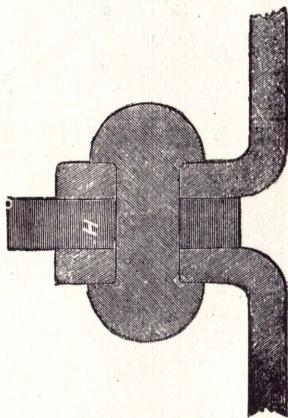
D. ADAMSON & CO.'S PATENT SEAM & CIRCULATING TUBE DOUBLE-FLUED BOILER.

NEWTON MOOR IRON WORKS,
NEAR MANCHESTER.



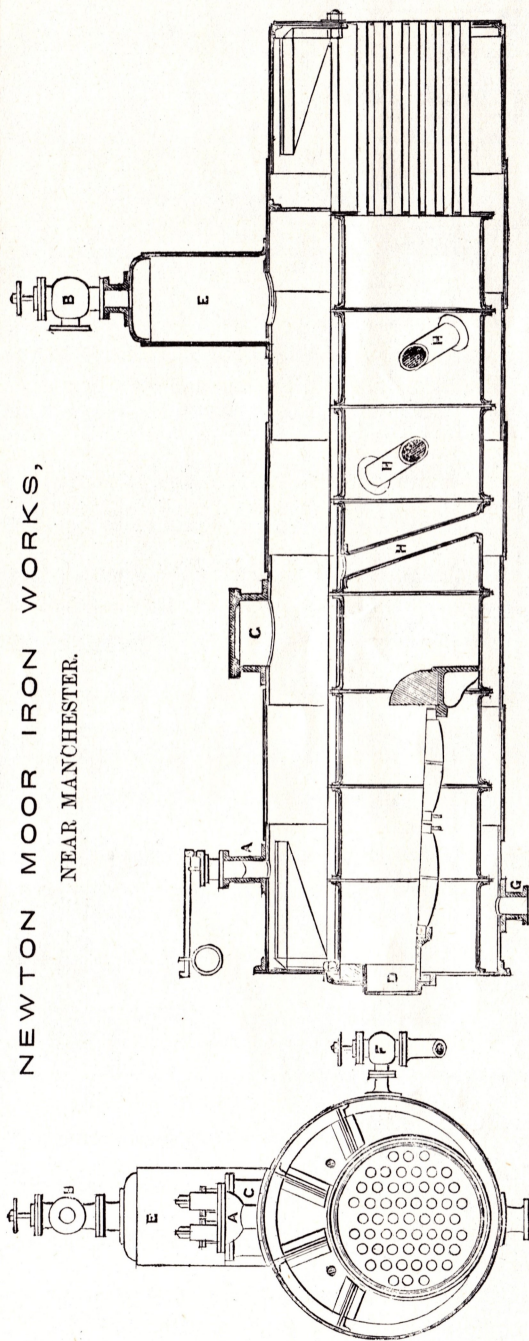
Reference.

- A DOUBLE SAFETY VALVE.
- B STEAM NOZZLE.
- C MANHOLE.
- D FIRE FRONT.
- E FEED VALVE (CHECK ACTION).
- F BLOW-OFF BASE.
- G CIRCULATING TUBES. ARE PLACED VERTICAL & SOLID WELD.
- H ENLARGED SECTION OF PATENT SEAM.
- I ANTI-PRIMING PIPE.



D. ADAMSON & CO.'S PATENT SEAM & CIRCULATING TUBE MULTITUBULAR BOILER.

NEWTON MOOR IRON WORKS,
NEAR MANCHESTER.



Reference.

A DOUBLE SAFETY VALVE.

B STEAM NOZZLE.

C MANHOLE.

D FIRE FRONT.

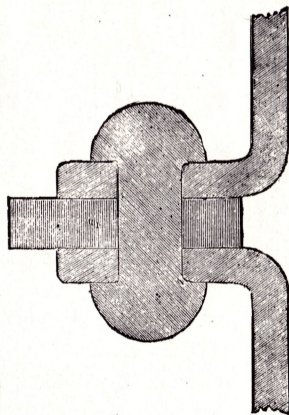
E DOME.

F FEED VALVE (CHECK ACTION).

G BLOW-OFF MUD BASE.

H CIRCULATING TUBES.

I ARE PLACED VERTICAL & SOLID WELD.
ENLARGED SECTION OF PATENT SEAM.



DANIEL ADAMSON & CO.'S

IMPROVED DOUBLE AND SINGLE-FLUED

Cornish & Multitubular Boilers, &c.,

WITH PATENT DRILLED SEAMS.

D. A. & Co. would invite the special attention of all users of steam power to their improved method of constructing Steam Boilers.

By the use of their Patent Machinery, the whole of the rivet holes, which are usually punched—to the great detriment of the plates both in strength and accuracy—are now drilled (when so ordered) after the plates are bent to their proper shapes and fixed in their respective positions. The advantage of this method must be obvious to all, as in forcing a punch through a solid plate the fibre of the iron must necessarily be injured, which cannot possibly occur in drilling. This advantage is more apparent in steel Boilers, which are now coming into very great favour for high pressure purposes, as steel is found to deteriorate in PUNCHING to a very considerable extent. The accuracy also must be very much greater by drilling the plates after being fitted together than can possibly be attained by the most careful setting out and punching before being bent; the whole, too, are left perfectly cylindrical, ensuring an accurate fit by the rivet, whereas in the old system the holes are elongated in the process of bending.

D. A. & Co. would observe that their Improved Drilled Boilers can, by means of their Patent Machinery, be produced at a price very slightly in advance of those made on the old system, whilst their superior efficiency and durability has been thoroughly proved after several years' trial.

By the adoption of the drilling system and proper workmanship, with good iron or steel in the manufacture of Boilers, explosions would cease to be, and the only disasters that could arise under ordinary working contingencies would be collapsed or bulged plates, or the springing of the rivetted joints, thereby producing seam leaks, and so stopping the Boiler for repairs.

The system employed in the manufacture of these Boilers will be found more fully detailed in the following extract from "Engineering."

BOILER MAKING.

Extract from "ENGINEERING," Jan. 4th, 1867, page 10.

It is of very little use preaching how a boiler ought to be made, unless we are prepared to show how a good boiler can be made in practice. We have selected Mr. D. Adamson's boiler works, at Newton Moor, near Manchester, as one of the best examples of their kind for the purpose of placing the present state of boiler-making practice, and the next progressive steps which are likely to be taken in the manufacture of boilers, before our readers. Mr. Adamson has been led to boiler-making as a speciality by his well-known patent for flanged seams, and his experience having been collected by the manufacture of nearly one thousand boilers, he is now considered one of the first authorities on boiler-making in this country. The main principles arrived at in the Newton Moor works are the following: To test every plate used as to its tenacity and ductility, to use no single row of rivets for longitudinal seams, and to apply double-rivetted welts to steel plates, and to weld up all longitudinal seams of iron plates used in the construction of internal flues. To drill all rivet-holes, without exception, after the plates are bent and put together in their proper position, so as to ensure perfect accuracy of fit for the rivets. To expose no double thickness of plates nor any rivet-heads to the direct action of the flame, and to give considerable elasticity to the entire structure for expansion and contraction with alterations of temperature. To test every boiler with water to a pressure exceeding the working pressure, not in direct proportion to the latter, but to an extent which will ensure a sufficient margin for safety without going to extreme test-loads. To prolong the hydraulic test with variations of pressure for a considerable length of time, during which all leakage is carefully observed and repaired. And, finally, to limit the strain of the extreme test-load to seven tons per square inch on iron, and to thirteen tons per square inch on steel.

The materials used for making boilers at the Newton Moor works are boiler plates of the well-known brands of iron, and, in preference to these, Bessemer steel plates made at the Bolton forge, or at Messrs. Cammell & Co.'s works. Each plate is ordered from the mill fully

two inches longer and wider than wanted for the boiler, so as to give a margin of one inch at each side, which is cut off by a shearing machine, and is made use of for testing the quality of the plate. This plan has the advantage of removing the rough ends of the plates, and at the same time avoiding the use of those portions which are always most likely to contain flaws, impurities, or irregularities for forming the rivet seams of the boiler. The strips removed by the shears, which strips are justly considered to be inferior portions of the plate, are, as we have said, used for testing the quality. Each strip is bent cold by hammering, and is expected to stand doubling up until the ends nearly touch each other, without showing any cracks or fractures, and all plates which fail under this test are rejected. As a rule, the Bessemer steel plates stand more than this, allowing of being doubled up quite close without the slightest signs of fracture. This is due to the precaution of ordering the softest kinds of Bessemer steel plates only, which are never expected to exceed a tensile strength of 38 tons on the square inch, all steel beyond that tenacity having been found too brittle for boiler-making. With boiler-plates, particularly those of steel, the process of annealing is of the utmost importance. Mr. Adamson has found, by direct experiments, that a plate rolled very hot, and a "black-rolled" plate, will expand at such different rates when heated as to strain the rivet seams; and when tested at the same temperature, the rates of elongation vary so much, that two such plates when joined will never take the strain equally. The process of annealing is, therefore, carried on at the works, and is combined with that of bending the plates. There is, of course, no art in annealing plates, all that is required being care to let them cool as slowly and gradually as possible. After the process of bending, the plates are fitted together by means of a few temporary bolts, which pass through holes previously punched through them. The diameter of these holes is much less than that of the rivet-holes, in order that they may be drilled out to their proper size for rivetting after they have served their temporary purpose.

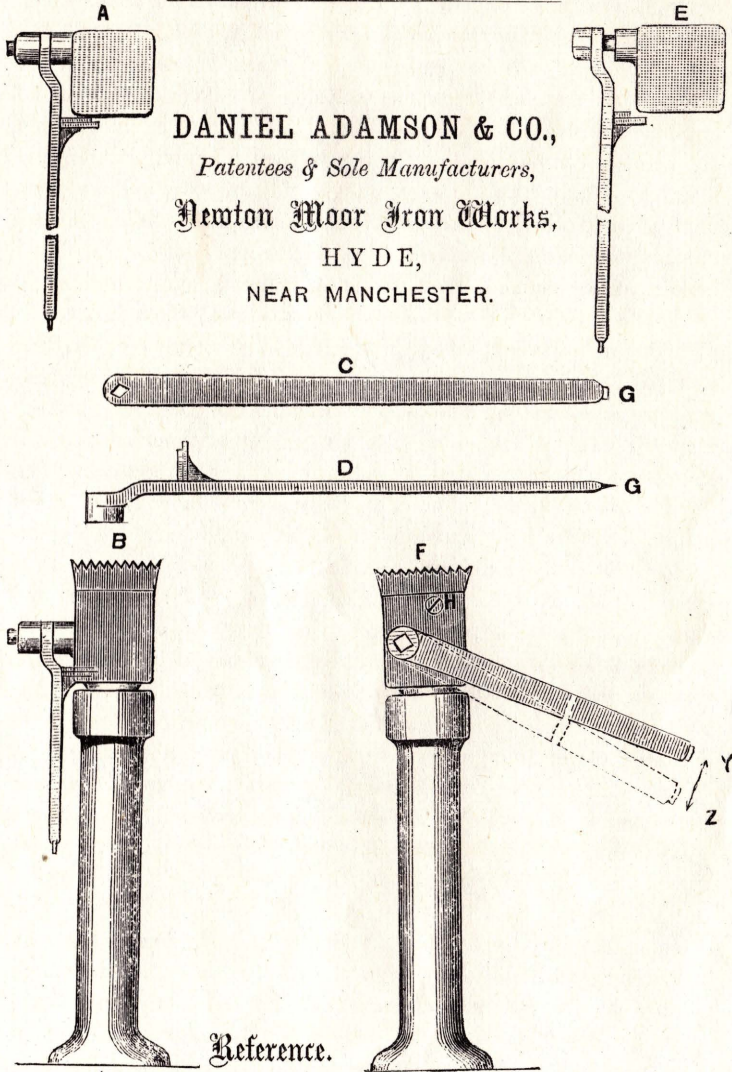
The plates are next put under a drilling frame having six headstocks, with horizontal drills all placed radially, and so arranged as to be adjustable to the diameter of each shell. The holes are drilled with great speed and accuracy, six at a time, and through both superposed plates at the same time. The plates being drilled together never change their relative position, and each rivet is thereby made an absolute mechanical fit. A still more complete

machine, having twelve drill head-stocks, is now in course of construction at the Newton Moor works, for their own use; and Mr. Adamson has kindly promised us drawings of this interesting tool for publication. The holes in the flanges and angle irons are drilled in a similar manner by plain vertical drilling machines, all holes being parallel to each other in those parts of a boiler. Rivetting is effected by machinery, wherever the shape and position of the parts will allow of the application of the machine. Mr. Adamson considers a machine-rivetted seam superior to one made by hand, particularly when steel rivets are used, as with hand-rivetting the numerous blows of the hammer cause that degree of brittleness called "hammer-hardening." The machines used for rivetting at Newton Moor are of Mr. Adamson's own design. They act by raising an adjustable weight through a series of compound levers, this weight actuating the rivetting die by its sudden descent. This principle insures the exertion of an exact pressure upon each rivet, and this pressure, whilst it can be adjusted to each kind of work, cannot be altered by the workmen tampering in any way with the action of the machine. For rivetting the flanged seams of internal flues a very ingenious arrangement is made use of for withdrawing the back holder by a cam after each stroke, so as to allow another rivet head to pass underneath, and replacing the holder in its position when wanted for holding the rivet head fast whilst the other head is being formed in the manner just described. The longitudinal seams of iron flues are welded up; and the flanges are then bent over a kind of anvil having the corresponding form, by careful hammering at a bare red heat. Steel plates are never welded at Newton Moor, Mr. Adamson considering a weld in steel insufficient in strength to rely upon it for the same strains to which solid steel is considered safe in his boilers. The steel flues have a strip of steel rivetted over their longitudinal seam, and this is placed in such a position in the flue as to be comparatively little acted upon by the flame. The flues are generally made $\frac{3}{8}$ in. thick in iron and $\frac{1}{4}$ in. in steel, the differences in resisting power for different pressures being adjusted by the distance and relative number of the flanged seams. Some of the finest boilers now made by Messrs. Adamson and Co. consist of a steel shell with wrought-iron flues and end plates. The shell and flues are strengthened at their ends with angle-iron rings turned on their faces, same as all the flanges and rings forming the seams. The manholes are welded up from plates, flanged out to shape from the solid, and rivetted with drilled holes. At the front ends of the wrought-iron flues,

where the grate is situated, it is preferred to substitute steel, which is less liable to blister under the direct action of the flame. The boilers are put together with all joints turned and faced in the lathe, with the most rigorous exclusion of all drifts or similar appliances which could cause a strain upon plates or rivets when the boiler is completed. The boiler is then filled with water, and a stand containing two pressure gauges side by side, and independent of each other, is screwed upon the manhole. Water is then slowly pumped into the boiler to a pressure which will cause leakage at any seam or rivet imperfectly closed, and a number of workmen are constantly watching and repairing these leaks. As the pressure is slowly raised, new leaks show themselves, and are repaired in their turn, until a strain considerably above the working pressure is arrived at, and such a freedom from leakage obtained that the pressure gauges will remain almost stationary for several minutes when the pumps are shut off. The pressure is then quickly removed, and after a short time put on again to see if sudden changes will cause any fresh leakage, which would have to be repaired by caulking. The final test is carried to a pressure some 50lb. or 60lb. above the working pressure of the boiler, and does not bear a strict proportion to the latter. A boiler intended to work at 100lb. pressure, for instance, is tested to 150lb. pressure, whilst a boiler for 160lb. working pressure is tested only to 220lb. This seems much more reasonable than the practice of testing to double the working pressure, or any other proportionate ratio of the working pressure, which makes the test too light at low, and unreasonably excessive for high working pressures.

The introduction of steel for boiler construction, of which Mr. Adamson has been one of the earliest advocates, is gaining ground very rapidly. The proportion of steel to iron used at the Newton Moor works has been gradually increasing until the scale has been now turned in favour of the former, and there can be no doubt that steel boilers will come into almost universal use as the safest and most economical in practice. The chief desiderata are now tubular steel plates rolled out of the solid, and seamless rings of angle steel. Designs for a mill for rolling both these articles are now under Mr. Adamson's consideration. Mr. Adamson also intends to plane all straight ends of his boiler plates, so as to improve their appearance and insure a greater facility and regularity in caulking their seams.

PATENT HYDRAULIC LIFTING JACKS.



A.—Plan showing Pump Lever at half-stroke.

B.—Elevation with the Lever down.

C & D.—Side and edge view of Lever, with Air Valve Screw Driver a G G.

E.—Plan showing Lever drawn from boss for lowering.

F.—Side elevation, showing position of Lever for commencing to lower.

H.—Air Screw Valve, to be unscrewed $\frac{1}{16}$ of an inch when using the "Jack."

Y.—Position of Lever for commencing to lower.

Z.—Position of Lever for lowering quickly.

ADAMSON'S PATENT HYDRAULIC LIFTING JACKS.

These Jacks are now used for almost every purpose where any lifting or moving is required, as in Ship Yards, Engine Works, Machine and Tool Works, Boiler Works, Foundries, Iron Works, Quarries, &c.

They are made of all sizes, to lift from FOUR TONS to FIFTY TONS, and upwards, and are now extensively used by the following and other firms:

Stockton & Darlington Railway Co.	New British Iron Co., near Birmingham.
Edinburgh & Glasgow Railway Co.	Beyer, Peacock, & Co., Manchester.
Todd & Mc.Gregor, Glasgow.	John Brown and Co., Sheffield.
Napier and Son, Glasgow.	G. B. Thorneycroft and Co., Wolverhampton.
Bray, Waddington, & Co., Leeds.	William Rigby, Glasgow.
Mersey Steel & Iron Co., Liverpool.	John Bagnall and Sons.
Maryport & Carlisle Railway Co.	John Ashbury, Manchester.
William Fairbairn & Sons, Manchester.	Samuda Brothers, London.
Sharp, Stewart, & Co., Manchester.	&c., &c., &c.
Platt Brothers & Co., Oldham.	
Maudsley, Sons, and Field, London.	

The action of ADAMSON'S JACKS is by Hydraulic Pump placed inside, and at the lower end of the Lifting Ram.

The upper part of the Ram and the Head of the Jack from a self-contained Cistern for oil (or water); no more fluid being used than is required to lift the Ram full stroke. These Jacks lift much more rapidly than any of the Screw Jacks at present in use, and enable one man to do the work of four men as compared with the Screw Jacks of equal power.

The lowering is under perfect command, and can be regulated to any desired speed, or stopped at any moment, with the slightest possible amount of manual labour.

There is also made to fit the Jack, a Claw for Lifting from the foot, which clips the top of the Jack (at B, on the annexed drawing) and slides up the Pillar.

The extra cost of a Claw is from twenty to thirty shillings, according to size.

TESTIMONIAL.

"SHILDON ENGINE WORKS, NEAR DARLINGTON.
12th October, 1859.

"GENTLEMEN,

"In reply to yours of the 6th, we have Six of your Hydraulic Lifting Jacks in use at these Works, and have pleasure in bearing testimony to their superiority over those hitherto in use; they lift more rapidly and can be worked with ease by one man, where four would be required to work the ordinary Jack.

"We can with confidence recommend them to the public both for their efficiency and economy in working.

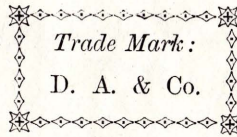
"Yours truly,

"THE SHILDON WORKS COMPANY,

"Messrs. D. ADAMSON & Co."

"Pro W. SNAITH.

N.B.—The Shildon Works Company have had Six 10 tons Jacks since the above date.



DANIEL ADAMSON & CO. beg respectfully to inform the Public that they have put down a Patent Cog Wheel Moulding Machine, by which they can supply the Trade, without the aid of Patterns, with SPUR, MORTICE, MITRE, BEVEL, AND OTHER WHEELS, up to 13 feet diameter and 17 inches wide, and with any number of teeth.

D. A. & Co. solicit your orders with confidence, as any Wheels intrusted to them to make will be executed with dispatch, and much truer than can be got from Wood Patterns.

PRICE LIST OF PATENT MACHINE-MOULDED
COG WHEEL CASTINGS.

	Per Cwt.
Spur Wheels above 1 ton each and above 4 inches pitch.....	9/6
„ above 1 ton each and under 4 inches pitch.....	11/0
„ above 12 cwt. each and under 20 cwt.....	11/6
„ above 6 cwt. each and under 12 cwt.	12/6
„ above 2 cwt. each and under 6 cwt.....	13/6

Bevel and Mortice Wheels, 2/- per cwt. extra.

Spur Wheels under 2 cwt. each are charged 28/- each.

Bevel Wheels under 2 cwt. each are charged 34/- each.

When Flanged at both ends of the Cogs, and Wheels cast in halves, 1/- per cwt. extra.

Plates and Bolts at 5d. per lb.

Worm Wheels, Spur and Bevel Rings, Segments, Segment Wheels, and Fly Wheels, made to any Diameter.

DELIVERED AT THE WORKS.

The above Prices are subject to variations in the Iron Market.

Newton Moor Iron Works, Hyde, near Manchester.

Palmer & Howe, Printers, Manchester.

TELEPHONE:-
ASHTON-UNDER-LYNE 2822.

ENGINEERING WORKS,
DUKINFIELD,
CHESHIRE.

It all began in 1842.

Greetings to you & best wishes
from the Great Grandson of our
Founder, — & from all of us
Here today.

Roderick B. Parkin.

Chairman & Managing
Director.

Xmas 1955.

